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DRAFT ENVIRONMENTAL IMPACT STATEMENT
ON

FIRST CONTINENTAL CORPORATION
WATER RIGHT APPLICATIONS

STATE DOCUMENTS

BENEFICIAL WATER USE PERMIT
CHANGE of EXISTING WATER RIGHT

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
WATER RESOURCES DIVISION
MARCH 1977
DNRC

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DRAFT ENVIRONMENTAL IMPACT STATEMENT

FIRST CONTINENTAL CORPORATION

WATER RIGHT APPLICATIONS

MARCH, 1977

Water Rights Bureau
Water Resources Division
MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
32 South Ewing
Helena, Montana 59601

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INTRODUCTION

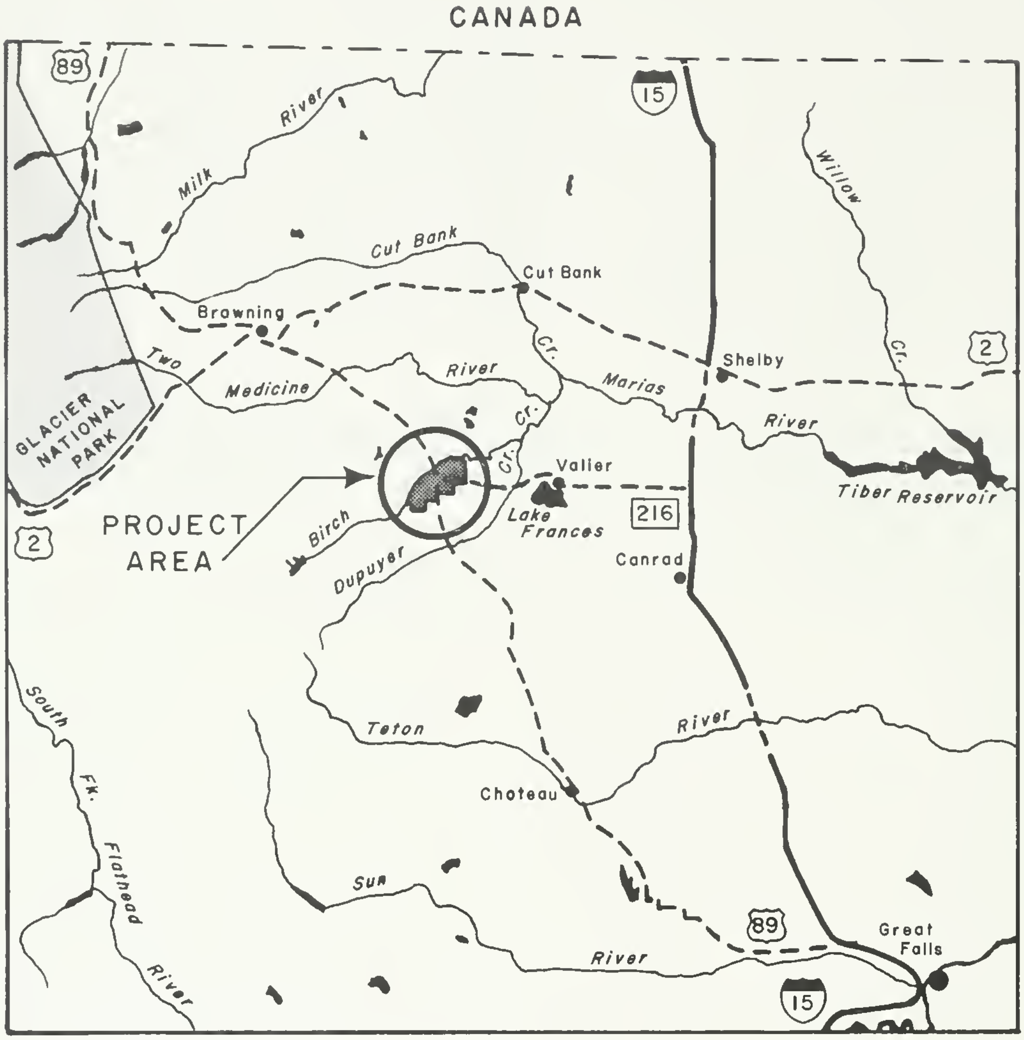
In 1975 and 1976, two Applications for Beneficial Water Use Permit (form 600) and two Applications for Change of Appropriation Water Right (form 606) were received by the Department of Natural Resources and Conservation (herein called the Department) from John J. Greytak, president of First Continental Corporation, for the Kingsbury Ranch, a division of First Continental Corporation. The action proposed in those applications is explained on pages 3 to 8 . The Department determined that, before a decision could be made whether to grant the applications, an environmental impact statement should be prepared. Such a statement is required by the Montana Environmental Policy Act and the rules and regulations adopted for its implementation if any proposed action (1) may result in significant environmental impacts or (2) is of a controversial nature. Both criteria apply to the applications received from First Continental Corporation.

The Department's authority and responsibility in acting upon these applications are described in the Montana Water Use Act of 1973 and the rules and regulations adopted under it, specifically, in Sections 89-880 to 89-888 and Section 89-892, R.C.M. 1947.

Figure 1 shows the location of the proposed project.

Figure I

LOCATION MAP



I
DESCRIPTION OF PROPOSED ACTION

NEW APPROPRIATIONS OF WATER

According to Application for Beneficial Water Use Permit 5078-g41M, the applicant intends to appropriate ground water by means of seven proposed wells and three proposed ground-water pits. The applicant expects that the proposed wells and pits will provide mid- to late-season supplemental irrigation water for approximately 2,500 acres, each integrated into the sprinkler-irrigation system shown on the map supplied by the applicant (redrawn as figure 2).

Each of the seven proposed wells is to be approximately 60 feet deep, equipped with a ten-horsepower turbine pump. The expected maximum diversion is 500 gallons per minute (gpm) from each well. The maximum volume of water expected to be used from July 1 to September 15 of each year, inclusive, is 170 acre-feet from each well. The wells would be drilled at the following locations in T. 30 N., R. 7 W., M.P.M., as shown in figure 2:

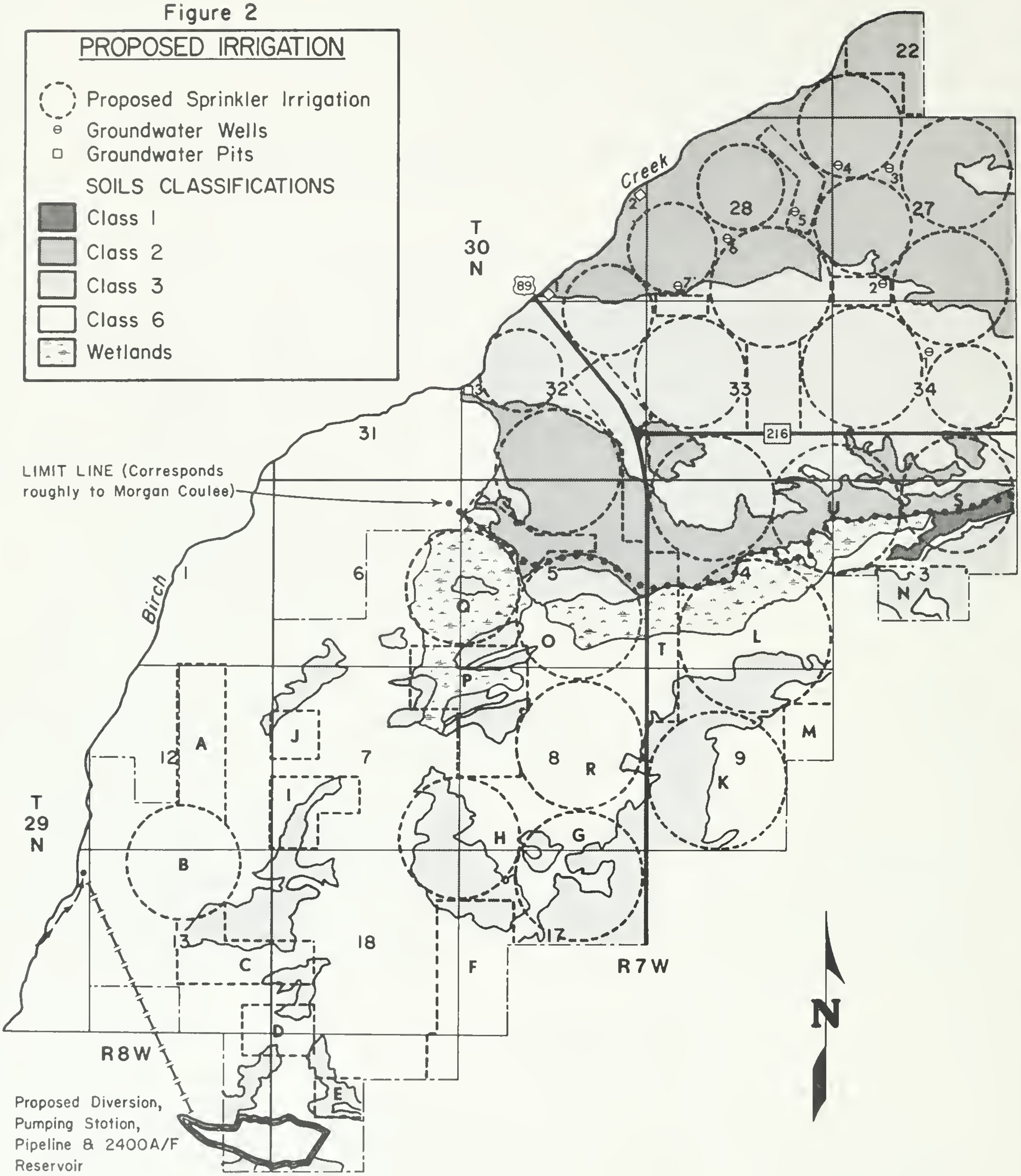
No. 1--NW¼ SW¼ NE¼ sec. 34
2--SW¼ SE¼ SW¼ sec. 27
3--NW¼ SE¼ NW¼ sec. 27
4--NW¼ SW¼ NW¼ sec. 27
5--NW¼ NE¼ SE¼ sec. 28
6--SE¼ NE¼ SW¼ sec. 28
7--SE¼ SW¼ SW¼ sec. 28

The three proposed ground-water pits would be approximately 200 feet from the edge of the Birch Creek flood plain and three-eighths to one-half mile from the mainstem of the creek. Each pit is expected to be a dugout about 15 feet deep. Water would be withdrawn from each by a 120-hp centrifugal pump. The applicant proposes to divert a maximum of 5,300 gpm and a total volume of 1,760 acre-feet of water during the period from July 1 to September 15 of each year from each pit. The pits would be dug at the following locations in T. 30 N., R. 7 W., M.P.M. (figure 2):

No. 1--SE¼ SE¼ NW¼ sec. 29
2--SE¼ SE¼ SW¼ sec. 28
3--NW¼ NW¼ SW¼ sec. 32

The applicant also intends to appropriate surface waters of Birch Creek, as proposed in Application for Beneficial Water Use Permit 5490-s41M. This would be accomplished by construction of an offstream-storage reservoir in the SW¼ of sec. 19, T. 29 N., R. 7 W., on Cartwright Coulee (see figure 2), or, as an alternate site, the NE¼ of sec. 17, T. 29 N., R. 7 W. A maximum of 20 cubic feet of water per minute would be diverted directly from Birch Creek at a point

Figure 2


PROPOSED IRRIGATION
Proposed Sprinkler Irrigation
Groundwater Wells
Groundwater Pits
SOILS CLASSIFICATIONS
Class I
Class 2
Class 3
Class 6
Wetlands
T 30 N
T 29 N
R8W
R7W
Creek
Birch
89
216
22
27
28
31
32
33
34
1
2
3
4
5
6
7
8
9
12
13
17
18
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
LIMIT LINE (Corresponds roughly to Morgan Coulee)
Proposed Diversion, Pumping Station, Pipeline & 2400A/F Reservoir
N

in the SE¼ of sec. 14, T. 29 N., R. 8 W., conveyed by means of a ditch or pipeline to the reservoir site, and stored for later irrigation use. The applicant has applied to divert from February 15 to June 15 of each year and only when high spring or excessive runoff periods occur. The water would be released from the reservoir and used as supplemental water for existing irrigation from September 1 to December 15 of each year. The water would be used on about 900 acres north of the reservoir, shown on figure 2 as the following lands:

T. 29 N., R. 7 W.--the rectangular fields in sec. 7, 17, and 18
T. 29 N., R. 8 W.--the rectangular fields and center-pivot circle in sec. 12 and 13.

CHANGES OF EXISTING WATER RIGHTS

According to Section 89-892, R.C.M. 1947, an appropriator may not change the place of diversion, place of use, purpose of use, or place of storage, except as permitted under this section and as approved by the Department. According to the language of the law, the Department shall approve the proposed change if it determines that the change will not adversely affect the rights of other persons.

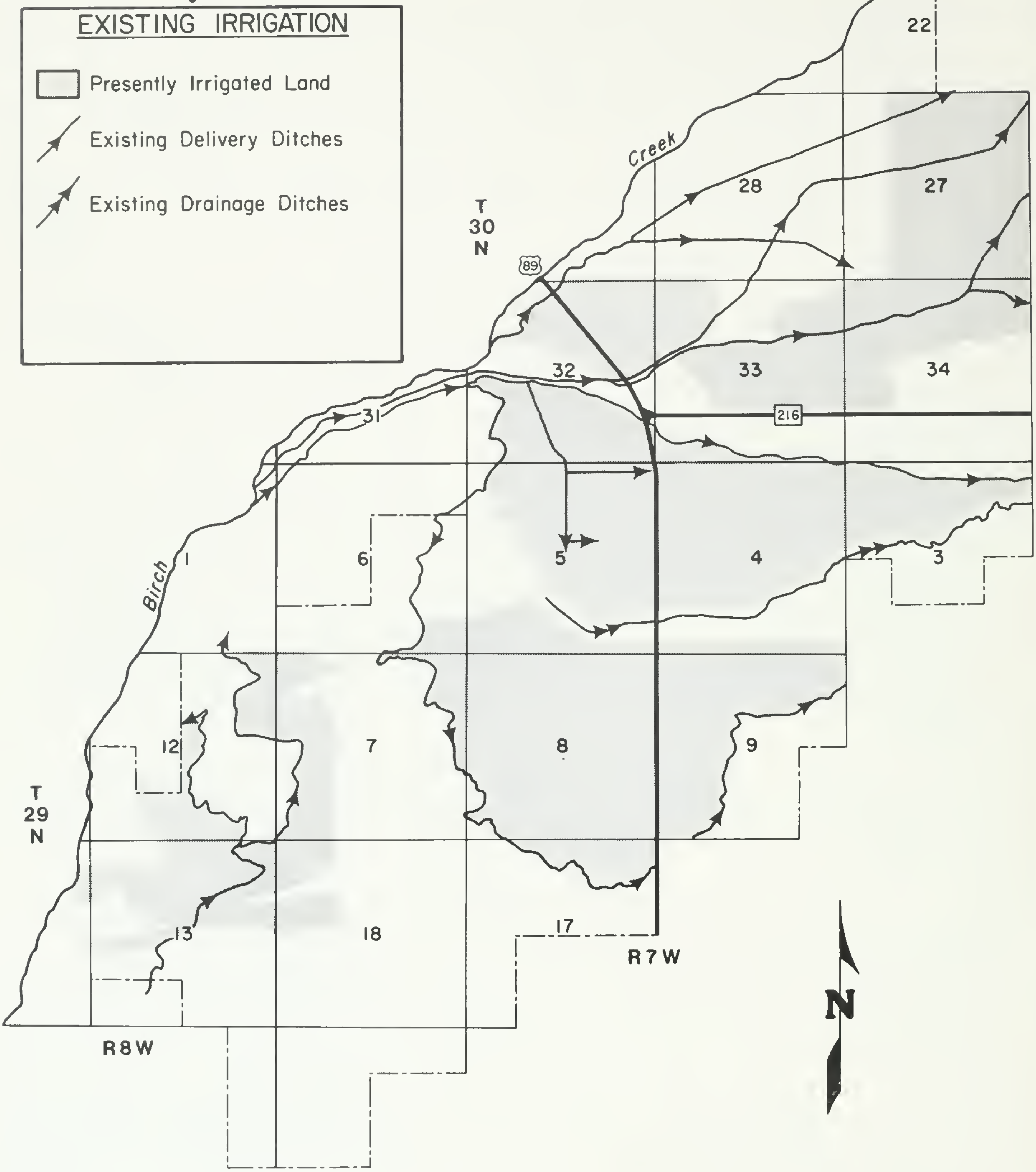
On January 23, 1976, an application (7325-c41M) was received by the Department from the First Continental Corporation for a change of appropriation. In a discussion with the Department, John Greytak of First Continental Corporation stated that he intends to change his method of irrigation (which does not require authorization from the Department) from flood to sprinkler irrigation. However, instead of flood irrigation of a claimed amount of 4,500 acres, the applicant intends to sprinkler irrigate an estimated 7,590 acres, irrigating more acres with the same amount of water. Figures 2 and 3 show the claimed past place of use and the proposed new place of use of all rights claimed, together with the places of use of the appropriations for which applications for water use permits have been made.

The applicant supplied a list, included in appendix A, of water rights which details each claimed water right or portion thereof. The statement of an engineer employed by the applicant concerning the recent history of the claimed rights and how the amount of those rights was established is also found in appendix A.

On August 19, 1976, another application (9291-c41M) was received from the First Continental Corporation for change of diversion points of portions of certain water rights. That application is explained here for clarification, although its impacts are not being considered in this impact statement because, as explained below, the application has already been acted upon in accordance with the provisions of the Montana Water Use Act of 1973. The water rights covered by this application are as follows:

1) A water right dated August 31, 1897, originally owned and appropriated by Alfred Gardner and Cal Stewart, recorded in Pondera County records in Book 1 of the "Transcribed Water Rights Book," page 43. First Continental Corporation claims to own 11 cubic feet per second (cfs) of this water right.

Figure 3


EXISTING IRRIGATION
Presently Irrigated Land
Existing Delivery Ditches
Existing Drainage Ditches
Birch
Creek
89
216
T
30
N
T
29
N
R 7 W
R 8 W
N
22
28
27
32
33
34
31
1
6
5
4
3
12
7
8
9
13
18
17

2) A water right dated July 7, 1900, originally owned and appropriated by John Hall, and recorded in Book 1 of the "Transcribed Water Rights Book," page 80. The First Continental Corporation claims to own 7.85 cfs of this water right.

3) The First Continental Corporation claims to own 300 shares of Birch Creek Water Company, or approximately 3.2 percent of the outstanding stock, which it claims entitles it to 3.2 percent of the water rights owned by the Birch Creek Water Company, or 532 miner's inches (13.3 cfs). In addition, the First Continental Corporation also claims a right under the terms and conditions of the articles of incorporation of the Birch Creek Water Company to use any water owned by the company and not being used by the shareholders.

The total claimed past use of water for these water rights as indicated in the application is 32.15 cfs up to 11,738 acre-feet per year, which has been used from April 15 to November 30 of each year. Diversion has been by gravity ditches.

The First Continental Corporation claims to have diverted waters pertaining to this change through the following diversion points:

1) The Hall-Stewart-Leech Ditch which diverts from Birch Creek in the NE¼ SE¼ of sec. 27, T. 29 N., R. 8 W.

2) The Kingsbury Ditch which diverts from Birch Creek in the NE¼ NE¼ of sec. 1, T. 29 N., R. 8 W.

3) The Cowgill Ditch, also known as the Kingsbury-Cowgill Ditch, which branches from the Kingsbury Ditch in the NW¼ NW¼ of sec. 16, T. 29 N., R. 7 W.

The new diversion point will be located on the right bank (facing downstream) of Birch Creek in the NE¼ NE¼ NE¼ of sec. 14, T. 29 N., R. 8 W.

The applicant intends to change a portion of those rights claimed, not to exceed 16 cfs and 5,700 acre-feet per year, to be used from April 15 to November 30 of each year. The water is still to be used for irrigation; however, diversion will be by a pump and pipeline. The applicant intends to irrigate pasture and alfalfa by means of sprinkler irrigation. The stated reason for the changes in point of diversion is to reduce ditch loss and increase irrigation efficiency; the applicant intends to make the proposed change after the authorization is granted.

The Department, during a field investigation of the present and proposed points of diversion, found no intervening diversions which may be adversely affected by such change. The records of the Department were also reviewed, and no pending applications for a water-use permit nor other applications for change in existing water rights were found that could be affected by the proposed changes. From the information available to the Department, it is concluded that no other rights would be adversely affected. Therefore, since the criteria specified in the Water Use Act are satisfied, an authorization to change the points of diversion was approved and issued. That authorization grants permission to change the point of diversion only. The authorization further states that it allows no other change in the appropriation--such as change in place of use or storage, or in nature of use. Such authorization is not a recognition by the Department of the validity of the rights claimed. A copy of the authorization is attached in appendix B.

II

ENVIRONMENTAL INVENTORY

NATURAL ENVIRONMENT

CLIMATE

The climate of the county is generally continental, with cold, relatively dry winters and warm, relatively wet summers. The most important local exception to the continental climate pattern is the chinook winds that blow frequently each winter, often for several days at a time.

At Valier, the freeze-free season runs normally from May 25 to September 16--114 days.

Pondera County follows the rough rule in Montana that precipitation increases with elevation. The highest station (Dupuyer, 4,125 feet) averages more than two inches more than the lowest station (Conrad, 3,520 feet). Of primary importance to dryland agriculture is that about 75 percent of an average year's precipitation falls during the April-to-September growing season. May and June are normally the wettest months. Table 1 shows selected precipitation data for the county.

TABLE 1
PRECIPITATION

Station	Yearly Average	Growing Season Average	Percent Falling in Growing Season	Wettest Year	Driest Year
Conrad (1911-62)	12.18*	9.49	78	19.48 (1941)	5.80 (1962)
Dupuyer (1947-62)	14.42	10.52	73	19.17 (1953)	8.66 (1960)
Valier (1912-62)	12.76*	10.26	80	20.65 (1948)	5.66 (1919)

*1931-60

Winter precipitation, December through March, usually totals less than an inch of water content from snowfall of about 30 inches (mountains excepted). In the mountains, winter snows are usually substantial, and contribute a considerable volume of spring runoff to the many small streams originating there.

Wind, hail, and to a lesser degree, cold waves (blizzards, one every two or three years, are of short duration) and heavy rains (about once in 15 years) occur in the county. The strongest winds usually occur during chinook conditions, which may occur from two to eight times each winter, producing gust speeds as high as 100 miles per hour in the more exposed locations. Hail damage of serious dimensions seldom occurs over more than scattered small areas. The eastern parts of the county generally experience more hail damage than west of longitude 112°.

WATER RESOURCES

Surface Water

There are four principal drainages in the county: (1) the combined Birch-Blacktail-Dupuyer creeks drainage, (2) Two Medicine River, (3) Dry Fork of the Marias River, and (4) Pondera Coulee and tributaries. Only the first of these would be affected by granting First Continental Corporation's applications. All diversions involved in the applications are from Birch Creek, and the proposed ground-water withdrawals could also affect Birch Creek's flow.

There are no complete, operative U.S. Geological Survey (USGS) surface-water gaging stations on Birch Creek, although the USGS has maintained stations in the past. One station, located just upstream from the proposed project in T. 29 N., R. 8 W., was operated from July 1907 to September 1937. The average discharge over that 30-year period was 159 cfs, or 115,100 acre-feet per year (af/y). Minimum flow, recorded several times in two years during that period, was three cfs. The highest annual runoff was 230,000 acre-feet in 1908; the lowest was 33,100 acre-feet in 1931 (Montana State Engineer's Office 1964).

Since 1913, the flow of Birch Creek has been regulated by Swift Dam. Swift Reservoir, managed primarily to provide a supply of water for irrigation, has an active storage of 29,980 acre-feet (Montana Department of Natural Resources and Conservation 1976).

Ground Water

Pondera County has not been the subject of ground-water studies. However, for general purposes, the county can be divided by the outcrop of the Virgelle Sandstone into two ground-water provinces. The area east of the outcrop consists of Colorado Shale covered by glacial drift. The possibility of developing other than small amounts of fair-to-poor-quality ground water in this area is not good. West of its outcrop, the Virgelle Sandstone and sandstone horizons in the Two Medicine Formation could be good aquifers, as could terrace gravels and alluvium associated with the larger stream valleys. The proposed development of ground water lies generally west of the Virgelle outcrop. The proposed pits would penetrate the alluvium associated with Birch Creek, and the wells would be drilled into the Birch Creek Flats, a terrace lying above and to the south of Birch Creek.

SOILS

Most of the county is covered by material which was transported by glaciers and deposited as "till"; this till, altered by the climate and living organisms over a period of time, produced the soil there today.

In some areas, the till has been eroded, leaving the underlying rock exposed at the surface; in other areas exposed rock has had time to weather, and shallow soils have developed. The chemical and physical properties of these young, shallow soils are nearly the same as the properties of the materials from which they are formed.

The rock types that make up the parent materials for the soils are dominantly sedimentary. Shale and sandstone are most abundant in the east and central portions of the county. Limestone is more abundant in the western part of the county, especially at the higher elevations. The proposed project area, as more specifically described on pages 22 to 25, contains soil types associated with till, shale, and sandstone.

FISH AND WILDLIFE

Bounded on the west by the Continental Divide, Pondera County contains a variety of wildlife habitats ranging from the high subalpine and timberline forests of the Rocky Mountains to semiarid steppe typical of the prairies of eastern Montana. These habitats support a variety and abundance of wildlife, including most species found in northwestern Montana.

The waters of Pondera County support an excellent sport fish population from the cold-water fishery of mountain streams to the warm-water fishery of the lower Marias River. Only the Birch Creek fishery is expected to be affected by the proposed development. No information is available on fisherman use of Birch Creek, but it is expected that the creek is only marginal in importance as a fishery (Hill 1977). Rainbow and brook trout are present.

SOCIOECONOMIC ENVIRONMENT

ECONOMIC BASE

In 1975, Pondera County ranked tenth in the state in cash receipts from all farm marketings (with approximately $32 million in receipts) and sixth in cash receipts from crops. The county ranked first in barley production, second in durum wheat, and third in winter wheat. Crop production accounted for 81 percent of receipts, and 19 percent were attributable to livestock and livestock products.

The county had an estimated 1975 population of 6,800, approximately 50 percent of which was located in the two incorporated communities of Conrad and Valier. Of the civilian labor force of 2,700, approximately 800 are employed in farming activities. Total personal income for the county amounted to $41,500,000, with farm earnings and farm proprietors' income totaling $18,500,000, approximately 45 percent of total income.

The 540 farms in the county in 1975 had a total size of 898,217 acres and an average size of 1,663 acres. Agricultural acreage in the county totaled over one million acres, with 925,000 acres in cropland. Irrigated cropland accounted for 15 percent of the total acres harvested.

LAND USE

All land in Pondera County west of Swift Reservoir and the western boundary of the Blackfeet Indian Reservation is Lewis and Clark National Forest land. The Indian reservation extends from the National Forest boundary to Birch Creek on the east and across the county line on the north. The private and public land from Birch Creek east across the county is almost all used for agriculture.

The amount of irrigated land in Pondera County in 1963 was documented in Water Resources Survey: Pondera County, Montana (Montana State Engineer's Office 1964). Figures 4, 5, and 6, reproduced from that report, show the irrigated land in the three townships which would be affected by the proposed project; table 2 explains how and by whom that acreage was irrigated.

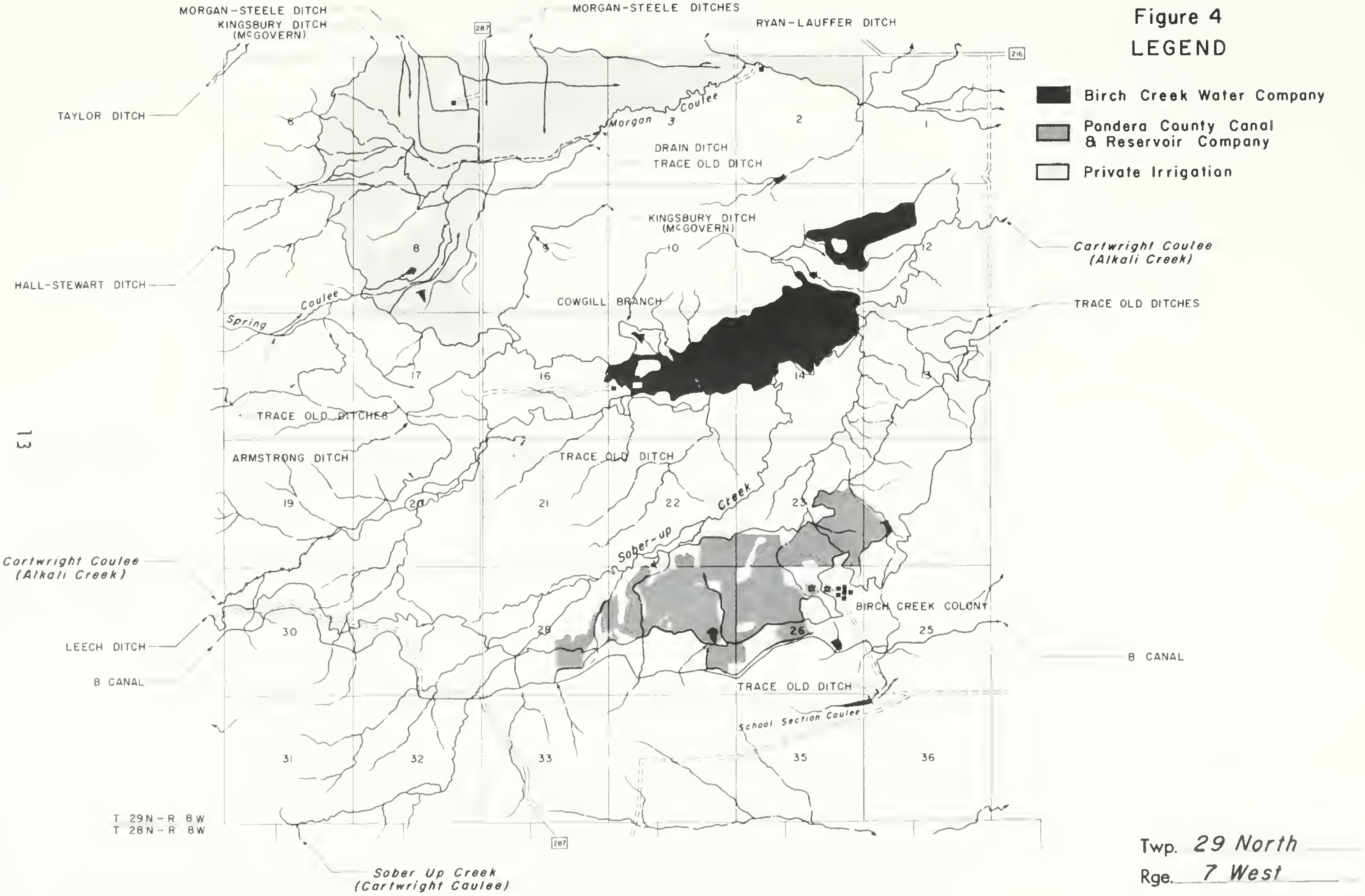
WATER USE AND WATER RIGHTS

The existing uses of Birch Creek water are irrigation and stock watering.

An adjudication of existing water rights as described in Section 89-870, *et seq*., R.C.M. 1947, has not been done in this area. Plans have not yet been made to adjudicate the existing water rights in this basin. Until existing water rights are adjudicated, the evidence presented at any hearing conducted to hear objections to applications for permits or for changes in claimed water rights, Water Resources Survey data, and other pertinent information must be evaluated by the hearing officer to determine if the authorization for change or permit can be issued.

Because the Water Resources Survey showed only lands irrigated at the time of the survey (1963), it is possible that the report does not present an adequate assessment of water rights for irrigation in the county; land irrigated since that time, for instance, is not shown.

Figure 4


LEGEND
■ Birch Creek Water Company
▨ Pondera County Canal & Reservoir Company
☐ Private Irrigation
MORGAN-STEELE DITCH
KINGSBURY DITCH (McGOVERN)
MORGAN-STEELE DITCHES
RYAN-LAUFFER DITCH
287
216
TAYLOR DITCH
HALL-STEWART DITCH
Cartwright Coulee (Alkali Creek)
LEECH DITCH
B CANAL
T 29N-R 8W
T 28N-R 8W
Sober Up Creek (Cartwright Coulee)
TRACE OLD DITCHES
Morgan Coulee
DRAIN DITCH
TRACE OLD DITCH
KINGSBURY DITCH (McGOVERN)
COWGILL BRANCH
Spring Coulee
TRACE OLD DITCHES
ARMSTRONG DITCH
Sober-up Creek
BIRCH CREEK COLONY
School Section Coulee
1
2
3
6
7
8
9
10
12
13
14
16
17
19
20
21
22
23
25
26
28
30
31
32
33
35
36
Twp. 29 North
Rge. 7 West

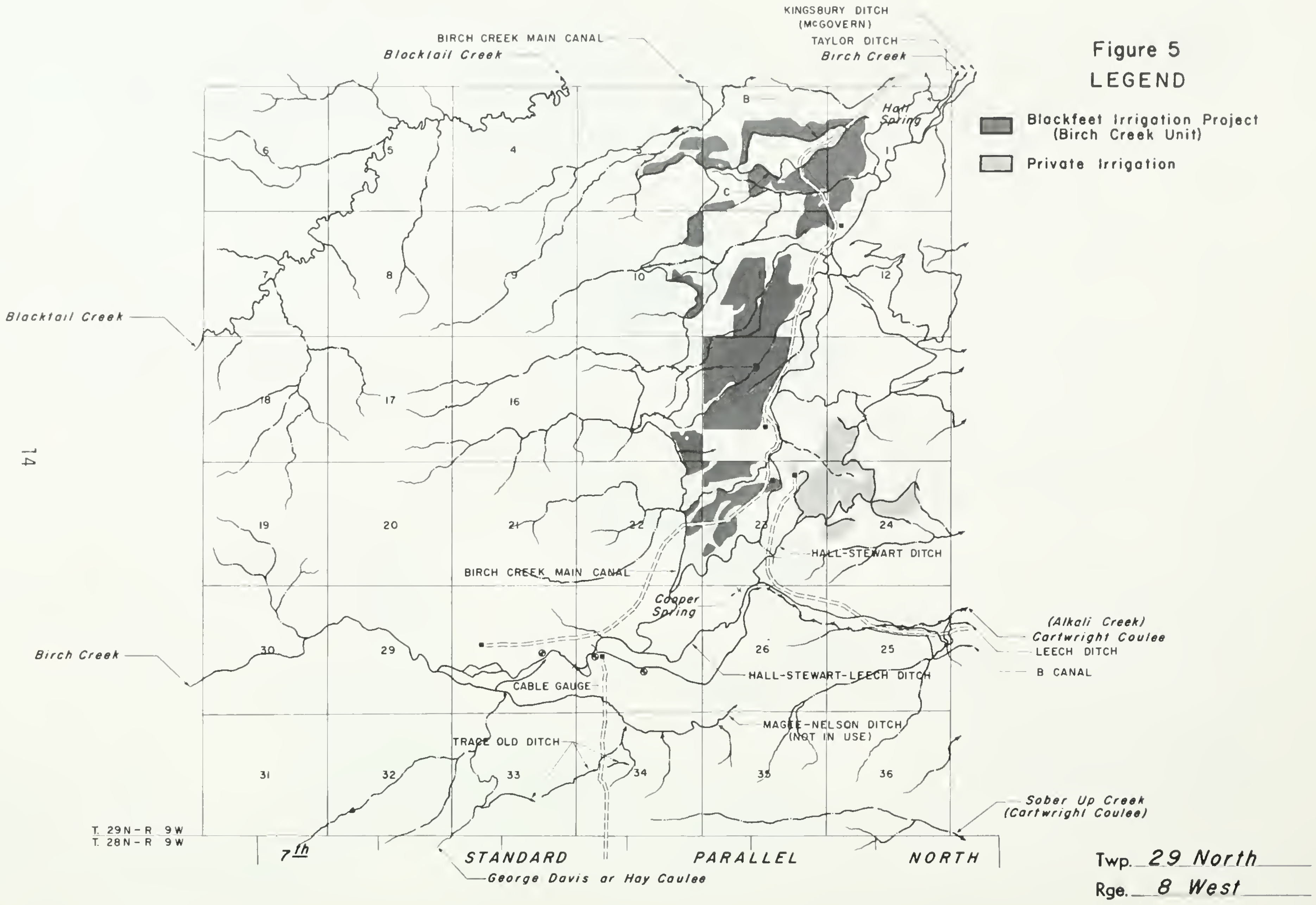


Figure 5

LEGEND
▨ Blackfeet Irrigation Project (Birch Creek Unit)
☐ Private Irrigation
KINGSBURY DITCH (McGOVERN)
TAYLOR DITCH
Birch Creek
BIRCH CREEK MAIN CANAL
Blacktail Creek
Hall Spring
B
C
1
4
5
6
7
8
9
10
11
12
16
17
18
19
20
21
22
23
24
25
26
29
30
31
32
33
34
35
36
Blacktail Creek
HALL-STEWART DITCH
BIRCH CREEK MAIN CANAL
Cooper Spring
(Alkali Creek)
Cartwright Coulee
LEECH DITCH
B CANAL
Birch Creek
CABLE GAUGE
HALL-STEWART-LEECH DITCH
MAGEE-NELSON DITCH (NOT IN USE)
TRACE OLD DITCH
Sober Up Creek (Cartwright Coulee)
T. 29N - R 9W
T. 28N - R 9W
7th STANDARD PARALLEL NORTH
George Davis or Hay Coulee
Twp. 29 North
Rge. 8 West

Figure 6

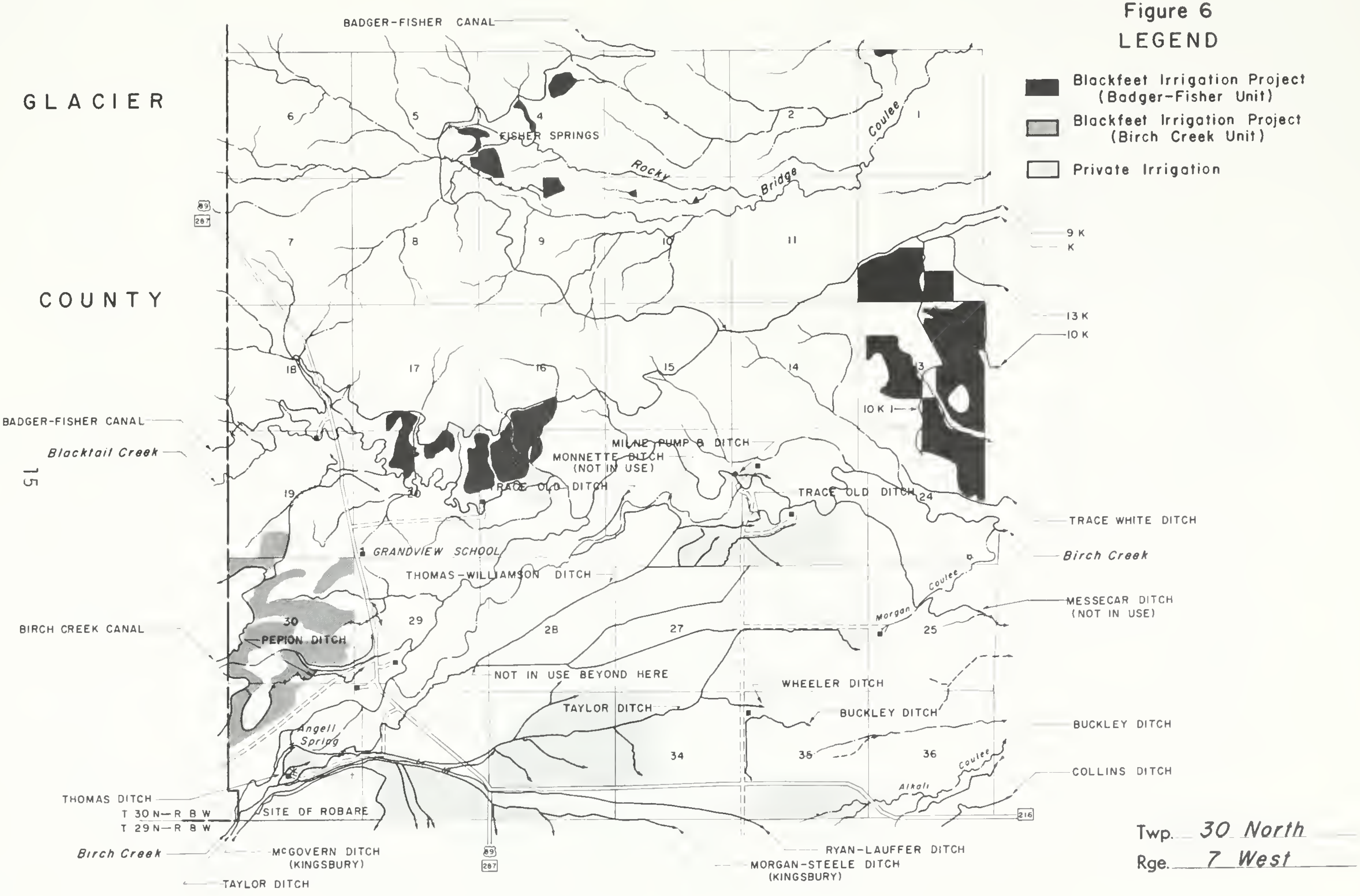

LEGEND
Blackfeet Irrigation Project (Badger-Fisher Unit)
Blackfeet Irrigation Project (Birch Creek Unit)
Private Irrigation
GLACIER
COUNTY
BADGER-FISHER CANAL
BADGER-FISHER CANAL
Blacktail Creek
BIRCH CREEK CANAL
THOMAS DITCH
T 30 N—R 8 W
T 29 N—R 8 W
Birch Creek
McGOVERN DITCH (KINGSBURY)
TAYLOR DITCH
SITE OF ROBARE
Angell Spring
PEPION DITCH
GRANDVIEW SCHOOL
THOMAS-WILLIAMSON DITCH
TRACE OLD DITCH
MONNETTE DITCH (NOT IN USE)
MILNE PUMP & DITCH
TRACE OLD DITCH
NOT IN USE BEYOND HERE
TAYLOR DITCH
WHEELER DITCH
BUCKLEY DITCH
Morgan Coulee
Alkali Coulee
FISHER SPRINGS
Rocky
Bridge
Coulee
10 K
9 K
K
13 K
10 K
TRACE WHITE DITCH
Birch Creek
MESSECAR DITCH (NOT IN USE)
BUCKLEY DITCH
COLLINS DITCH
RYAN-LAUFFER DITCH
MORGAN-STEELE DITCH (KINGSBURY)
89
287
89
287
216
1
2
3
4
5
6
7
8
9
10
11
13
14
15
16
17
18
19
20
24
25
27
28
29
30
34
35
36
Twp. 30 North
Rge. 7 West

TABLE 2
IRRIGATED ACREAGE IN THREE TOWNSHIPS IN PONDERA COUNTY, 1963

Township and Range	Irrigator	Water Source	No. of Acres
T. 29 N., R. 8 W.	Sadie McDonald	Hall-Stewart Ditch	228
T. 29 N., R. 7 W.	Mary B. Kingsbury and Clark S. Whitcomb	McGovern-Kingsbury Upper Ditch	947
		Kingsbury-McGovern Ditch	1,076
T. 30 N., R. 7 W	Mary B. Kingsbury and Clark S. Whitcomb	Taylor Ditch	530
		Morgan-Steele Ditch	200
		McGovern Ditch	59
Total			3,040

SOURCE: Montana State Engineer's Office 1964 and Department records

There have been no filings for water to maintain fish and wildlife on Birch Creek. Pursuant to Section 89-801, R.C.M. 1947 (repealed 1973), the Montana Fish and Game Commission was specifically given authority to file for the unappropriated waters of specific named streams and only on specific reaches of those streams named. Birch Creek was not specified in this statute, and no reservation of water pursuant to Section 89-890, R.C.M. 1947, has been approved for the creek.

Information relative to the rights claimed by the applicant, as extracted from Pondera Canal Company records (including the "Atwood Report," compiled in 1915 for the purpose of establishing lands under the Carey Land Act), has been compiled and is available from the Department on request.

III
THE DEPARTMENT'S ALTERNATIVES

Alternative actions available to the Department in processing the applications are restricted under the Montana Water Use Act of 1973. A permit must be issued if the following criteria are met (Sec. 89-885, R.C.M. 1947):

1) there are unappropriated waters in the source of supply;
2) the rights of a prior appropriator will not be adversely affected;
3) the proposed means of diversion or construction are adequate;
4) the proposed use of water is a beneficial use;
5) the proposed use will not interfere unreasonably with other planned uses or developments for which a permit has been issued or for which water has been reserved;
6) an applicant for an appropriation of fifteen (15) cubic feet per second or more proves by clear and convincing evidence that the rights of a prior appropriator will not be adversely affected.

Section 89-886, R.C.M. 1947, further qualifies the Department's possible actions as follows:

> The department may issue a permit for less than the amount of water requested, but in no case may it issue a permit for more water than is requested or than can be beneficially used without waste for the purpose stated in the application . . . It may issue a permit subject to terms, conditions, restrictions, and limitations it considers necessary to protect the rights of other appropriators. . . A permit shall be issued subject to existing rights and any final determination of those rights made under this act. (Emphasis added.)

Pursuant to the Montana Water Use Act, Section 89-892, R.C.M. 1947, "an appropriator may not change the place of diversion, place of use, purpose of use, or place of storage except as permitted under this section and approved by the department." Further, the section specifies that "the department shall approve the proposed change if it determines that the proposed change will not adversely affect the rights of other persons."

Although the provisions of the Water Use Act are compelling, the Department must not ignore broader considerations of state policy regarding environmental quality.

Article IX of the Montana Constitution of 1973 provides:

> Section 1(3). The legislature shall provide adequate remedies for the protection of the environmental life support system from

> degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources.
>
> Section 4. The legislature shall provide for the identification, acquisition, restoration, enhancement, preservation, and administration of scenic, historic, archeologic, scientific, cultural, and recreational areas, sites, records and objects, and for their use and enjoyment by the people.

Under the Montana Environmental Policy Act of 1971, state agencies are directed to (Sec. 69-6503, R.C.M. 1947):

> 1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations . . .
>
> 4) preserve important historic, cultural, and natural aspects of our unique heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice . . .
>
> 6) enhance the quality of renewable resources . . .

In addition, the stated purpose of the Montana Environmental Policy Act is "to declare a state policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment . . ." (Sec. 69-6502, R.C.M. 1947.)

Under the Water Quality Act of 1971 (Sec. 69-4801, R.C.M. 1947), it is declared that the public policy of this state is to "conserve water by protecting, maintaining, and improving the quality and potability of water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation, and other beneficial uses."

The Montana Water Use Act, Section 89-866(3), R.C.M. 1947, declares that "It is the policy of this state and a purpose of this act . . . to provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of its people with the least possible degradation of the natural aquatic ecosystems . . ." (Emphasis added.)

MODIFICATION

Modification of the applications for water use permit and the application for change of existing water right may be made so as to satisfy criteria of Section 89-885, R.C.M. 1947, referred to above and the Montana Environmental Policy Act (MEPA) and rules adopted thereunder. The applications could be modified in several ways, by the applicant and/or the Department.

Besides denial or approval of the applications as submitted, the following additional alternatives may be possible:

A) Application for Water Use Permit 5078-g41M--Wells

1. Approve for irrigation of lands of classes 1, 2, and 3 only.
2. If it is shown that there is insufficient water, then the application could be approved only for what water is available.
3. Combination of alternative 1 and 2.
4. Approval only for ground water that may be available because of deep percolation losses of the applicant's surface irrigation with existing surface-water rights.
5. Approval of wells and not pits, or vice versa.

B) Application for Water Use Permit 5490-s41M--Reservoir

1. Approve for irrigation of lands of classes 1, 2, and 3 only.
2. If it is shown that there is insufficient water during the time requested in the application, then approval could be only for available water or only for the period when excessive flows are likely to occur.
3. Combination of alternative 1 and 2.

C) Application for Change of Existing Water Right 7325-c41M

1. Approve change in place of use to lands of classes 1, 2, and 3 only.
2. Deny the portions of the change which may adversely affect the rights of other persons.

IV

ENVIRONMENTAL IMPACTS OF THE ALTERNATIVE ACTIONS

IMPACTS OF DENIAL OF THE APPLICATIONS

It may be assumed that, if the applications were denied, irrigation would proceed in the area as it now is, and that irrigation of the proposed additional lands would not be attempted. No impact to the natural environment beyond that occurring now would result. The only impact to the cultural environment would be the loss of potential increase in income to the First Continental Corporation and loss of such potential associated benefits as increases in the county tax base and in the number of local jobs.

IMPACTS OF MODIFICATION OF THE APPLICATIONS

The applications as submitted could be modified in several ways, as discussed on pages 18 and 19 . Modification of applications to less than what has been applied for would reduce the impacts associated with approving the applications.

Approving the applications only for irrigation of lands classed as 1, 2, or 3 would probably result in the most significant reduction of impact both now and in the future. The potential for saline seep would be minimized, although, if the lands are not irrigated efficiently and properly, there could still be degradation of the lands classed as 1, 2, or 3 due to increased salinity in the soils. Also associated with modifcation of the applications to include class 1, 2, and 3 lands only would be a reduction in the impacts to fish and wildlife, economics, energy demand, and land use.

It may be found that there is insufficient water to meet the applications as submitted. There would be a small reduction in the impacts to fish and wildlife, land use, economics, and other areas if the proposed development is installed at a reduced level.

IMPACTS OF APPROVAL OF THE APPLICATIONS AS PROPOSED

NATURAL ENVIRONMENT

Water Resources

First Continental Corporation has made application to develop ground water along Birch Creek. The three proposed pits would penetrate the alluvium associated with the creek and have some effect on the creek system. Ground-water flow within the creek valley should be primarily downstream but also toward the creek. The pits would intercept part of this ground-water flow and possibly generate ground-water gradients away from the creek, causing stream depletion. A large part of the water which would be diverted by the pits may actually be water that would have reached the stream. Consequently, their effect on all downstream surface-water uses and needs, including prior rights, must be considered.

The seven wells proposed by First Continental Corporation would penetrate a terrace deposit roughly coincident with the area covered by Birch Creek Flats, along the south side of Birch Creek. This deposit is bounded on the south, east, and west by hills composed of sands and clays of the Two Medicine Formation and on the north by Birch Creek, which has penetrated the terrace completely, cutting into the underlying Two Medicine Formation. The permeability of the gravel appears high, and if water is present, moderate yields could be expected from wells. The applicant has completed six uncased test wells in the area of the project, and all penetrated the terrace gravels. Four of these wells did not encounter water at the time of the drilling, indicating that, during the nonirrigation season at least, the gravel within the bounds of the project may not be fully saturated. However, high ditch losses and downward percolation of excess irrigation water during the irrigation season may provide recharge to saturate the gravel. No studies quantifying the amount of water this type of recharge may provide to the aquifer have been made. If the amount of water the aquifer receives from this source, together with the amount of water normally in storage, are not sufficient to meet the anticipated ground-water needs of the project, other wells penetrating hydrologically connected portions of the terrace may be adversely affected. Because Birch Creek has completely truncated the northern edge of the terrace, the effect of these wells on Birch Creek is expected to be negligible.

Soils

The primary impact to the natural environment which could result from the proposed project is the degradation of soils because of increased alkalinity or salinity. Potential for saline seep is high in much of the land proposed for irrigation because of soil characteristics and/or underlying formations. The potential also exists for affecting the productivity of other lands in the vicinity of the project, including some administered by the Montana Department of State Lands, because of the drainage characteristics of the area.

Classification. The Department classified the suitability of the land prposed for irrigation through a land classification survey. In this study, "irrigable land" refers to land with soils, topography, and drainage features appropriate for irrigation by gravity or sprinkler methods. These lands are divided into classes on the basis of their relative potential for irrigation farming. Class 1 represents irrigable land with potentially high productive value, class 2 represents irrigable land of intermediate value, and class 3 includes irrigable land of the lowest value suitable for irrigation. Land not suitable for irrigation because of soils, topography, or drainage, or any combination of these features, is described as class 6 land.

Results of Field Survey. A survey of existing soils in the affected area was supplied by Montana Testing Laboratories, Inc., of Great Falls, Montana, employed by the First Continental Corporation. The survey shows soil and topographic characteristics which can be evaluated for irrigation suitability. The soil-series identification used in the survey followed the nomenclature of the Soil Conservation Service National Cooperative Soil Survey in identifying the typical soil-pedon characteristics. The survey was field checked by soil scientists of the Department and was found to be representative of the soils on the Kingsbury Ranch. The land was then classified into classes 1, 2, 3, and 6. Figure 2 on page 4 shows the proposed irrigation layout for Kingsbury Ranch and the suitability for irrigation, by classes, of those lands. A more detailed identification is given in appendix C.

The lands proposed for irrigation are divided by Morgan Coulee, which corresponds roughly with the dotted limit line on figure 2. Also called Miller Coulee, this is the coulee which flows eastward across sections 5, 4, and 3 of T. 29 N., R. 7 W. The purpose of the limit line on figure 2 is to divide the predominantly irrigable land to the north from the predominantly nonirrigable land to the south. For ease of reference, this report will refer to that line as Morgan Coulee, even though the actual coulee lies somewhat to the south of the mapped line in places.

The irrigation field layouts north of Morgan Coulee, encompassing approximately 4,100 acres, are on soils of class 2 and 3 lands, both suitable for irrigation. The soils are described as Doughty gravelly loam, having a shallow depth to gravel strata. The key management factor for successful irrigation of these soils is frequent light water applications, allowing the soil to fill without excessive deep water loss.

The soils generally south of Morgan Coulee vary considerably. Of the 3,200 acres shown in the field layouts south of the coulee, an estimated 2,390 acres (see appendix C) are class 6 (nonirrigable); the remaining 810 acres of irrigable land are scattered throughout the area. Each of these two land categories is described in more detail below.

1. Nonirrigable Land South of Morgan Coulee. Of the 2,390 acres designated nonirrigable, an estimated 570 acres in fields designated L, O, P, Q, S, T, and U in the Morgan Coulee area have a high water table. The dominant soils within these swamp areas are alluvial, poorly drained, gravelly loams. The drainability of these heavy-textured soils is poor due to the high concentrations of sodium and salts; in many areas, the soils are shallow to shale. For these reasons, and because the high-alkali, saline, shallow-to-shale uplands which drain to these low, seeped areas may deposit additional salts and sodium, crop production from these lowlands would be poor. The upland soils within fields L, O, P, R, and T are Laurel-Midway, shallow-to-shale soils. The Laurel soils are saline, sometimes having 1/16 to 1/8 inch of salt crust on the surface, and have a slope of 2 to 4 percent. The Midway soils are silty-clay-loam-textured surface soil over clay subsoil. The parent material is shale at 14- to 30-inch depths below the surface. Any of those factors (slowly permeable clay soils, high salinity, shallow to shale) cause the land to be classified as class 6 land.

   The class 6 lands within fields G, H, K, L, and N are areas of residual soil over shale or siltstone parent material. The soil depths vary from 6 to 40 inches, averaging about 30 inches. The topography is undulating uplands with slopes of 4 to 15 percent. The land was classed nonirrigable because irrigation would cause the transpiration of salts from the shallow shale soils to the surface.

The class 6 soils within fields A, B, C, D, E, F, J, I, and M are residual over shale or siltstone parent material. These are Midway soils, having a silty-clay-loam texture over platy, silty, and clay-shale parent material. The depth to parent material varies from 6 to 30 inches, averaging close to 30 inches. The slopes of fields A, B, C, and D are 4 to 15 percent, averaging 8 percent; fields E, F, I, J, and M have more gentle slopes of 4 to 8 percent.

Fields A, B, and C are recharge areas for shallow subsurface drainage into the downslope state lands. Irrigation of the recharge area will cause large saline seep areas on the slopes and draws located in the E½ of the E½ of sec. 12 and the E½ of the NE¼ of sec. 13, T. 29 N., R. 8 W., and in the W½ of the NW¼ of sec. 18, T. 29 N., R. 7 W. The state lands have small areas of saline seep now showing in some draws. Even summer fallowing dryland wheat in the recharge areas would probably speed up the seepage process. Also, irrigation of fields J and I may cause small saline seep outbreaks downslope, probably in portions of the state lands in the N½ of the SE¼ and S½ of the NE¼ of sec. 7, T. 29 N., R. 7 W.

2. Irrigable Land South of Morgan Coulee. The 810 acres of irrigable land south of Morgan Coulee is largely in fields G, H, K, L, and N. The class 3 areas in fields G, H, K, L, and R are rolling uplands with slopes from 4 to 8 percent. The majority of the soils are Chama loams, loam to silt-loam materials deposited as loess, alluvium, or deep weathered residuum from siltstone. The subsoils are highly calcareous, mildy alkaline, and permeable. The crop productivity should be high; however, the irrigation of 4- to 8-percent slopes could cause some erosion problems. Also, approximately 280 acres of Kobar clay soils in fields G, H, K, L, and R are classified as class 3 irrigable lands. Successful irrigation will require slow water application; the intake rate is slow, and rapid application would cause high surface runoff. The irrigation of the class 6, residual, shallow-to-shale soils in fields C, D, E, G, H, K, L, and R may cause high salt loads to accumulate in class 3 irrigable lands in those and adjacent fields because the shallow-to-shale soils are recharge areas for downslope drainage.

In summary, the land proposed for irrigation north of Morgan Coulee is predominantly class 2 and 3 irrigable land; no major negative impacts should result from irrigation of these lands unless they are managed unwisely. South of Morgan Coulee, of the 3,203 acres proposed for irrigation, about 2,390 acres are nonirrigable; some of these areas are already seeped, and some are permanently wetted areas. There are about 810 irrigable acres south of the coulee, including 755 class 3 acres, 8 class 2, and 47 class 1. Table C-2 in appendix C identifies these lands by proposed irrigation field and by section.

Drainage. As discussed in U.S. Department of Agriculture Handbook 60, *Saline and Alkali Soils* (1953), drainage is the process of removal of excess water from soil. Excess water discharge by flow over the soil surface is referred to as "surface drainage," and flow through the soil is termed "subsurface drainage." The design of drainage systems is influenced by many factors, with no simple rules or formulas by which all these factors can be taken into consideration. The principal factors are drainage requirements, water-transmission properties of soil, and boundary conditions. In irrigated regions, the adequacy of drainage is also related to salinity. Salts in irrigation water, in the soil, in the shallow ground waters increase the drainage requirements. Handbook 60 states that the depth to the water table must be such that the upward flow of saline ground water into the root zone is reduced or eliminated. The water table must be low enough that adequate leaching is permitted and that a concentration of salts in the root zone by upward flow is not established.

An evaluation of drainage for soils in fields L, O, P, Q, T, and U along Morgan Coulee indicates that correct drainage and water management for preventing salinization and seepage of these low fields may be extremely difficult, for these reasons:

1. The high-sodium subsurface water has already entered the root zone in the low, shallow-to-shale, previously irrigated areas in these fields. Removal of that water by drainage would be difficult because the soils are shallow to shale and siltstone, heavy textured, and high in sodium.

2. The soil structure and shales of these low areas are not porous enough to allow the water to drain into the lower depths of the substrata.

3. The irrigation of upland slopes of 4 to 15 percent, shallow to shale and siltstone, in fields A, B, C, G, H, I, and J will cause rapid movement of subsurface water high in sodium and salt into the lower, gently sloping areas such as Morgan Coulee.

The salinization and alkalinization of upland and lowland areas south of Morgan Coulee will be a continuing process and will probably curtail plant growth in both upland and lowland areas.

Fish and Wildlife

There would be only minor changes in existing wildlife habitat, since these applications are for lands which have been under cultivation and irrigation or in use as pasture. The appropriation of the flows of Birch Creek for storage in the proposed reservoir would occur only during the spring runoff or flash floods during the period from February 15 to June 15 each year. Furthermore, the diversion could only occur when surplus flows occur in the creeks over and above the flows which are necessary to satisfy existing water rights. The proposed project is not expected to alter the existing wildlife and fisheries environment.

SOCIOECONOMIC ENVIRONMENT

Economics

Additional costs would be incurred by the operator for purchase of irrigation and well equipment, drilling of wells, pumping and pipeline system construction, and ground-water pit construction. Operation costs would also be higher due to the power requirements for operating the sprinkler and pumping systems. Significant investment costs would be incurred by the operator for the proposed system. Given the soils limitations of the project area, productivity of the proposed operation may decline in time, making it a more risky undertaking than alternative investment opportunities. No significant social costs, other than possible effects on downstream appropriators and the potential of increasing saline seep on lands identified elsewhere in this report, are anticipated from the proposed project.

Benefits from the proposed project, if successful, would:

1. provide increased on-farm and wage income due to employment increases, enlarging the local economy's purchasing power for goods and services,

2. increase the income of the equipment-and-materials supplier sector of the economy as a result of the purchase of the required irrigation-system equipment,

3. increase the county tax base by the increased land values due to the project developments, and

4. increase state and federal income tax revenues due to the increase in taxable operator and employee incomes.

Land Use

With the more intensive and efficient irrigation system proposed, increased total production and higher crop yields would be possible with effective management practices. The system would enable a more flexible and diversified operation in the production of wheat, grains, pasture, and hay than under the existing system. Production on lands classified as nonirrigable because of poor soil capabilities which are proposed to be irrigated could eventually be less than under a dryland operation due to the potential salinity problems on these lands. Depending upon the management and operations practices employed and the soils capabilities, ultimate production yields could be highly variable.

Other Impacts

There are several other potential areas of socioeconomic impact:

1. Energy Demand. The proposed project will primarily use sprinkler irrigation of new lands; also, existing flood irrigation will be changed to sprinkler irrigation. The electrical demand of these systems should not require replacement of main service lines or installation of new ones.

2. Historical and Archeological Sites. The area covered by the proposed project has not been extensively surveyed for sites of historic or archeological significance. No sites are known within the area. Because the proposed project involves the cultivation of lands not now cultivated, the potential exists for the disturbance of sites.

3. Aesthetics and Natural Beauty. No significant impacts are anticipated as a result of the project. Lands formerly not cultivated have been used in the past for various agricultural practices associated with ranching and farming.

4. Transportation Networks and Traffic Flow. The existing transportation routes provide adequate service to the project and market areas. The increased crop production may cause a slight increase in traffic in moving production to market areas.

V

RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

This relationship is the primary conflict in the proposed project. As discussed above, implementation of the First Continental Corporation's proposed action would quickly generate economic benefits (income and employment). But the risk of eventually decreasing the productivity of the land is real; saline seep potential is high for much of the land proposed to be irrigated. If the land becomes seeped, it would be difficult or impossible to reclaim and return to former levels of production. Productivity of these lands (and suitability for continued irrigation or other agricultural practices, such as dryland cropping) would be lowered if saline seep occurs. The economic benefits would also be reduced; in fact, depending on the extent of seepage, the economic returns from those lands may eventually be less than they are now, to the landowner as well as to the county. Seepage may also degrade adjacent lands.

VI

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

When a beneficial water use permit is granted, some resources are committed to the diversion, transportation, and storage of water.

The diversion and consumption of Birch Creek water and ground water is, in essence, an irretrievable commitment of a finite natural resource. Future water-use opportunities are reduced. Montana's prior appropriation doctrine recognizes this commitment in the principle of "first in time, first in right."

The planned water-storage reservoir would flood some land, thereby precluding other surface-use options.

The conversion from direct gravity diversion to pumping directly from the stream, pumping ground water, and pumping stored waters of Birch Creek would require a commitment of electrical power and of the natural resources required to produce and use that electricity.

According to the soils interpretations made by the Department, irrigation of 2,390 acres of class 6 soils having salinity potential could cause an irreversible salinity problem which would put these lands, and probably adjacent lands, out of production.

VII

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APPENDIX A

SUPPORTIVE INFORMATION SUPPLIED BY THE FIRST CONTINENTAL CORPORATION WITH ITS APPLICATIONS

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Birch Creek Water Rights and Use--Tabulated by John Greytak 36

Claimed Water Rights on Birch Creek 37

Statement of Wayne Otto on Possible Past Water Use on Kingsbury Ranch 41

TABLE A-1

BIRCH CREEK WATER RIGHTS AND USE--TABULATED BY JOHN GREYTAK

Name of Appropriator	Date Filed	Date Appropriated	Amount of Appropriation (cfs)	Pondera Canal Company	Birch Creek Water Company	First Continental Corporation	Other
Barron-Upham	--	4-9-84	37.50	18.75	2.50	21.25	--
Thomas	3-21-93	3-18-93	12.50	12.50	--	--	--
W. Greene	3-21-93	3-18-93	12,500.00	--	--	--	--
Pat Gray	12-20-94	12-18-94	12.50	--	--	12.50	--
J. Pepion	4-10-06	4-25-95	10.00	--	--	--	--
M. White	8-18-05	5-2-95	12.50	--	--	--	--
A. Steele	10-16-95	5-1-95	12.50	--	--	--	--
W. Cox	7-5-95	6-2-95	250.00	--	--	--	--
Tom Hill	10-28-95	10-8-95	7.50	--	--	--	--
Faust-Messecar	11-7-95	10-12-95	15.00	--	--	--	--
J. Morgan	10-15-95	10-14-95	125.00	31.25	62.50	--	--
M. Davlin	2-15-06	11-12-95	5.00	--	--	--	--
J. Hunter	12-17-06	2-27-96	5.00	--	--	--	--
C. Thomas	4-10-06	4-15-96	10.00	--	--	--	10.00
Potter-Thomas McGovern, etc.	6-25-97	4-20-97	250.00	233.75	--	16.25	--
Ryan-Lauffer	5-24-97	5-19-97	37.50	--	--	--	37.50
Morgan-Steele	6-8-97	6-4-97	125.00	62.50	--	62.50	--
(From this point on I list our rights only)							
F. D. Cooper	7-16-97	6-30-97	12.50	--	--	12.50	--
Stewart-Gardner	9-1-97	8-31-97	62.50	--	41.50	21.00	--
L. Taylor	2-3-98	1-14-98	25.00	--	--	18.75	--
T. & S. McGovern	6-1-00	4-25-00	50.00	--	--	50.00	--
John Hall	7-9-00	7-7-00	31.50	--	--	31.50	--
T. N. Stinson	8-28-06	10-15-03	5.00	--	--	5.00	--
J. H. Clack	8-22-04	8-8-04	50.00	--	--	30.00	--

Table 1.--Claimed water rights

Appropriator	Date filed	Appropriation date	Recording Book	Recording Page	Description of land Sec.	Description of land T.	Description of land R.	Description of land Location	Amount of appropriation (cfs)	Amount claimed
George Barron and Hiram D. Upham	- ? -	4/9/1884	1	48	17 18	28 N. 28 N.	7 W. 7 W.	E½ NW¼, SW¼ NW¼ SE¼ NE¼	37.50	21.25
Charles P. Thomas	3/21/1893	3/18/1893	1	3	31	30 N.	7 W.		12.50	
William H. Greene	3/21/1893	3/18/1893	1	2		30 N.	7 W.		12,500.00	
Patrick Gray	12/20/1894	12/18/1894	1	3	23 24	30 N. 30 N.	7 W. 7 W.	Lot 2 S½ SW¼ Lot 3	12.50	12.50
John B. Pepion	4/10/1906	4/25/1895	1	197	31 30	30 N. 30 N.	7 W. 7 W.	(land in) (land in)	10.00	
Mary J. White	8/18/1905	5/2/1895	1	183	23	30 N.	7 W.		12.50	
Annie M. Steell	10/16/1895	5/1/1895	1	16		- ? -		- ? -	12.50	
William Cox	7/5/1895	6/2/1895	1	6	Mouth of Birch Creek Canyon				250.00	
Thomas R. Hill	10/28/1895	10/8/1895	1	19	30	30 N.	6 W.	SE¼	7.50	
Daniel Faust and Lewis A. Messecar	11/7/1895	10/12/1895	1	20	23	30 N.	7 W.	(point of diversion)	15.00	
Jerry Morgan	10/15/1895	10/14/1895	1	15	Mouth of canyon				125.00	31.25
Mollie Davlin	2/15/1906	11/12/1895	1	190	24	30 N.	7 W.	(land in)	5.00	
John Hunter	12/17/1906	2/27/1896	1	210	1	29 N.	8 W.	(land in)	5.00	
Charles P. Thomas	4/10/1906	4/15/1896	1	196	23	29 N.	8 W.	Lot 7, SW¼ NW¼	10.00	
Samuel L. Potter, Thomas McGovern, and J. W. McNight	6/25/1897	4/20/1897	1	37	1	29 N.	8 W.	Lot 2	250.00	16.25
Jacob Lauffer and Henry Ryan	5/24/1897	5/19/1897	1	31		30 N.	7 W.	- ? -	37.50	

Ralph Morgan and Anna M. Steel	6/8/1897	6/4/1897	1	35		29 N. 30 N.	7 W. 7 W.	(land in)	125.00	62.50
George W. Magee	6/8/1897	6/5/1897	1	34	27 28	29 N. 29 N.	8 W. 8 W.	Lot 5 Lots 1, 2, 3	12.50	
David Lutz, H.G. Crain, C.P. Thomas, Alfred Gardner	6/24/1897	6/18/1897	1	36		-?-		-?-	37.50	
F.D. Cooper	7/16/1897	6/30/1897	1	39	14	29 N.	8 W.	Lots 1, 2, 3, 4	12.50	12.50
H.G. Conrad	7/21/1897	7/12/1897	1	16		29 N. 30 N.	5 and 6 W. 5 W.	(land in)	250.00	
Calvin Stewart	8/5/1897	7/24/1897	1	40	14 23 24	29 N. 29 N. 29 N.	8 W. 8 W. 8 W.	SE¼ SE¼ Lots 1, 2, NE¼ NE¼ NW¼	10.00	
Alfred Gardner and Cal Stewart	9/1/1897	8/31/1897	1	43		29 N.	8 W.		62.50	11.00
Lena Taylor	2/3/1898	1/14/1898	1	47	29	29 N. 30 N.	8 W. 7 W.		25.00	18.75
Charles Buckley	4/13/1898	4/12/1898	1	52	35	30 N.	7 W.	N½ SW¼, N½ SE¼ S½ NE¼, S½ NW¼	20.00	
Conrad Investment Company	12/12/1902	7/6/1898	1	56		29 N	8 W.	(land in)	500.00	
Conrad Investment Company	7/21/1898	7/16/1898	1	19		30 N.	5 W.	(land in)	500.00	
Mollie Davlin	1/15/1903	6/15/1899	1	142	24 25	30 N. 30 N.	7 W. 7 W.	SW¼ SW¼ N½ NW¼, SW¼ NW¼	5.00	
Thomas and Sophia McGovern	6/1/1900	4/25/1900	1	76	8	29 N.	7 W.	All	50.00	50.00
Sybil D. Cowell	6/22/1900	6/21/1900	1	79	12 13 14	29 N. 29 N. 29 N.	7 W. 7 W. 7 W.	S½ SW¼ NW¼ NW¼ NE¼ NE¼	25.00	
John Hall	7/9/1900	7/7/1900	1	80		29 N. 29 N.	7 W. 8 W.		31.50	7.85

John Monnette	1/14/1902	10/20/1900	1	113	30 25	30 N. 30 N.	6 W. 7 W.	Lot 3 NE¼ NE¼	12.50	
William Cowgill and E.E. Leecks	5/14/1901	5/11/1901	1	89	9 1	29 N. 29 N.	8 W. 7 W.	W½ SW¼ S½ SW¼	50.00	
Carl Harris	6/6/1901	5/20/1901	1	94	32	30 N.	6 W.	Lot 1, W½, W½ E½ SE¼ NE¼, E½ SE¼	5.00	
Phillipien Harris	6/6/1901	5/20/1901	1	95	31 32	30 N. 30 N.	6 W. 6 W.	(land in)	10.00	
Joseph A. Ingram and Isabelle Thomas	10/7/1901	9/18/1901	1	102	26 31	30 N. 30 N.	7 W. 7 W.	W½ SE¼, E½ SW¼ Lots 2, 3, 4, SE¼ NE¼ NW¼ SE¼	12.50	
Philip A. Clack	10/25/1901	10/24/1901	1	103		29 N.	8 W.	(land in)	5.00	
Nicholas S. Dodds	4/4/1903	4/3/1903	1	144	22 26 28 27 23	28 N. 29 N. 28 N. 28 N. 28 N.	8 W. 7 W. 8 W. 8 W. 8 W.	SW¼ SW¼ SW¼ SE¼ SE¼ NE¼ W½ NW¼ SW¼ SE¼, S½ SW¼	50.00	
Thomas N. Stimson	8/28/1906	10/15/1903	1	205	18	29 N.	7 W.	E½ NE¼, SE¼, NE¼ SW¼	5.00	5.00
Pondera Canal Co.	3/25/1904	2/1/1904	1	159	28	29 N.	8 W.	SE¼	1000.00	
Thomas P. Aspling and Griff Jones	4/23/1904	4/4/1904	1	161		28 N.	8,9,10 W.	(lands in)	50.00	
Mary Stewart	3/24/1906	4/10/1904	1	195	22 21	30 N. 30 N.	7 W. 7 W.	Lots 6, 7, 8, 9, 10 E½ NE¼, NW¼ NE¼ NW¼, N½ SW¼	12.50	
John H. Clack, et al.	8/22/1904	8/8/1904	1	169		29 N.	8 W.	(land in)	50.00	30.00
I.J. Studebaker	5/26/1905	5/6/1905	1	179		-?-		-?-	3.125	
Joseph Tatsey	3/7/1906	2/10/1906	1	191		-?-		-?-	12.00	
Josephine Tatsey	3/7/1906	2/10/1906	1	192		-?-		-?-	4.00	
Annie Tatsey	3/7/1906	2/10/1906	1	193		-?-		-?-	4.00	
Margaret Prince	4/25/1906	4/12/1906	1	199	9	29 N.	7 W.	W½ SW¼	5.00	

United States for Indians	1907							(1666.2/2 MI)	41.65
United States	5/25/1910	5/7/1910	1	152	22	29 N.	8 W.		500.00
Valier Montana Land and Water Company	7/17/1913	7/1/1912	1	560	27	29 N.	8 W.		5000.00

STATEMENT OF WAYNE OTTO* ON POSSIBLE PAST WATER USE ON KINGSBURY RANCH

Attached is the revised map of Kingsbury Ranch's prior irrigated acres. I feel I should give you a little past history on the map development and prior irrigated acres. First, the map was compiled by tracing from aerial photos (not stereo pairs) and USGS quad sheets, so there no doubt is some error in scaling for use with a planimeter. Secondly, Mr. Wallace Kingsbury (previous owner) sat down with Mr. Greytak (present owner) and pointed out areas on photos that he had irrigated at one time or another in the past. Mr. Stuart Whitcomb (Mr. Kingsbury's stepson and previous ranch operator) did the same with Mr. Greytak. As near as we could determine from the photos, the areas Mr. Kingsbury indicated amounts to about 3,500 acres and Mr. Whitcomb added another 1,000 acres to this total. I therefore feel we have a legitimate claim to 4,500 acres previously irrigated land in the general areas shown on the map.

I assume the mapping error, especially on boundaries, could carry over onto the proposed irrigation systems maps. Calculations from actual field measurement shows we will have the following acres under sprinkler irrigation: Center-pivot-type sprinklers (24 machines), 5,580 acres; supplemental-type sprinklers (hand lines, big gun, wheel lines), 2,010 acres. Originally there were five major canals and ditches that served the previously irrigated acres; namely, Kingsbury, Taylor, Morgan-Steel, Hall-Stewart, and Birch Creek Water Company ditches. From knowledge I have gained working on the ranch since September 1974, the following is my estimation of what went on in the past (please refer to blueline map showing the original ditch system): The lands north of the Valier highway (part of sec. 32, sec. 33 and 34, T.30 N., R. 7 W.) were probably irrigated by the Taylor ditch; lands in sec. 32 and part of sec. 33, T. 30 N., R. 7 W., and sec. 3 and 4 and part of sec. 5, T. 29 N., R. 7 W., were apparently irrigated by Morgan-Steel ditch; all the remaining lands adjacent to the Browning highway would have been irrigated by the Kingsbury ditch, including perhaps some supplemental water from Birch Creek Water Company ditch diverted into the lower end of Kingsbury ditch (Cowgill branch). Lands located on the high area (western portion of the property) were irrigated from the Hall-Stewart ditch.

After the 1964 flood, which destroyed all headgates, only the Kingsbury headgate was rebuilt. The Taylor ditch (if used) and Morgan-Steel ditch receive their water from a turnout in the Kingsbury ditch located about half a mile downstream from the headgate.

In regard to annual consumptive use of irrigation water prior to 1974, I would estimate the majority of acres irrigated were hayland and pasture with probably about 1,000 acres at most in small grains. Based on this estimate, the actual crop use would be about 6,400 acre-feet per year. I think the highest efficiency one could expect from the old ditch system would be about 50 percent, which would raise the yearly ranch use to about 12,800 acre-feet.

An estimate of the maximum yearly consumptive use of irrigation water the ranch will use with sprinkler irrigation is about 13,500 acre-feet through the Kingsbury ditch, 1,200 acre-feet through the Birch Creek Water Company ditch, and about 2,000 acre-feet through a new proposed diversion works that replaces the washed-out Hall-Stewart diversion.

*Wayne Otto is an engineer employed on Kingsbury Ranch by the First Continental Corporation.

APPENDIX B

AUTHORIZATION TO CHANGE APPROPRIATION WATER RIGHT

Page

Authorization 44
    Exhibit A 45
    Exhibit B 46

Form No. 620
(11/74)

Application for Change No. 9291-c41M

STATE OF MONTANA

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

AUTHORIZATION TO CHANGE APPROPRIATION WATER RIGHT

Pursuant to Section 89-892, R.C.M. 1947, of the MONTANA WATER USE ACT, the Department of Natural Resources and Conservation, through the office of the Administrator of the Water Resources Division, hereby authorizes the Change of Appropriation Water Right submitted by FIRST CONTINENTAL CORPORATION, JOHN J. GREYTAK, PRESIDENT, of GREAT FALLS, MONTANA *under Application No.* 9291-c41M

The appropriation water right and its use

See Exhibit "A" hereto attached and made a part hereof.

The Department hereby authorizes the change of the above-referenced water right as follows:

See Exhibit "B" attached hereto and made a part hereof.

The approval of this change in no way is to be construed as recognition by the Department of the water rights involved. All rights are subject to possible modification under the proceedings pursuant to Section 89-865, et seq., R.C.M. 1947.

The applicant shall notify the Department in writing within 30 days after completion of the authorized change, ***by filing a Notice of Completion of Change of Appropriation Water Right, Form 618.***

Dated September 7, 1976

Assistant Administrator
WATER RESOURCES DIVISION

Laurence Siroky
Witness

Recorded in State Record of Water Rights Changes, Volume 1 *, Page* 157.

Application for Change No. 9291-c41M

Exhibit "A"

First Continental Corporation claims the following water rights:

The appropriation water right and its use is a portion, being 7.85 cubic feet per second, of the claimed filed appropriation in the name of John Hall, for appropriation from Birch Creek, with a priority date of July 7, 1900, as recorded in Book 1 of the Transcribed Water Rights Book, page 80, of Pondera County, Montana.

The second water right covered by said application is the water right dated August 31, 1897, originally owned and appropriated by Alfred Gardner and Cal Stewart recorded at Book 1 of the Transcribed Water Rights Book, page 43. First Continental Corporation claims ownership of 11 cubic feet per second of this water right.

The water rights owned by the Birch Creek Water Company: First Continental Corporation claims ownership of 300 shares of this water company which entitles it to 13.3 cubic feet per second. In addition, First Continental Corporation claims the right under the terms and conditions of the articles of incorporation of the Birch Creek Water Company to use any waters owned by the Company and not being used by the shareholders.

Waters pursuant to the above-claimed water rights have been diverted from the following diversion points:

1. The Hall-Stewart-Leech Ditch which is diverted from the right bank of the Birch Creek near the northwest corner of the NW¼ SE¼ of Section 27, Township 29 North, Range 8 West.

2. The Kingsbury Ditch which diverts from the Birch Creek in the NE¼ NE¼ of Section 1, Township 29 North, Range 8 West.

3. The Cowgill Ditch, also known as the Kingsbury-Cowgill Ditch, which takes off from the Kingsbury Ditch in the NW¼ NW¼, Section 16, Township 29 North, Range 7 West.

Application for Change No. 9291-c41M

Exhibit "B"

The Department hereby authorizes the change of the above-referenced water rights as follows:

To change the point of diversion to the right bank of the Birch Creek in the NW¼ NW¼ NW¼, Section 14, Township 10 North, Range 8 West, M.P.M. Such diversion shall be apportioned among the water rights specified above.

The approval of this change in no way is to be construed as recognition by the Department of the water rights involved nor to authorize a change in such rights except to authorize a change in point of diversion. All rights are subject to possible modification under the proceedings pursuant to Section 89-865, et.seq., R.C.M. 1947.

If the Department receives evidence at a future hearing held under the Montana Water Use Act, or an application by First Continental Corporation for a water use permit, a change, or if the Department receives such evidence in any other manner, that First Continental Corporation makes any change in the claimed existing rights stated herein other than the change in point of diversion authorized hereunder, or that may be authorized in the future, that water is being appropriated or used in excess of the actual existing rights, this change approval may be revoked by the Department after notice to First Continental Corporation and an opportunity to be heard thereon.

The applicant shall notify the Department in writing within 30 days after completion of the authorized change, by filing a Notice of Completion of Change of Appropriation Water Right, Form 618.

APPENDIX C

SOILS

Page

Detailed Soils Map 48

Table C-1. Legend for Detailed Soils Map 49

Table C-2. Land Classification 50

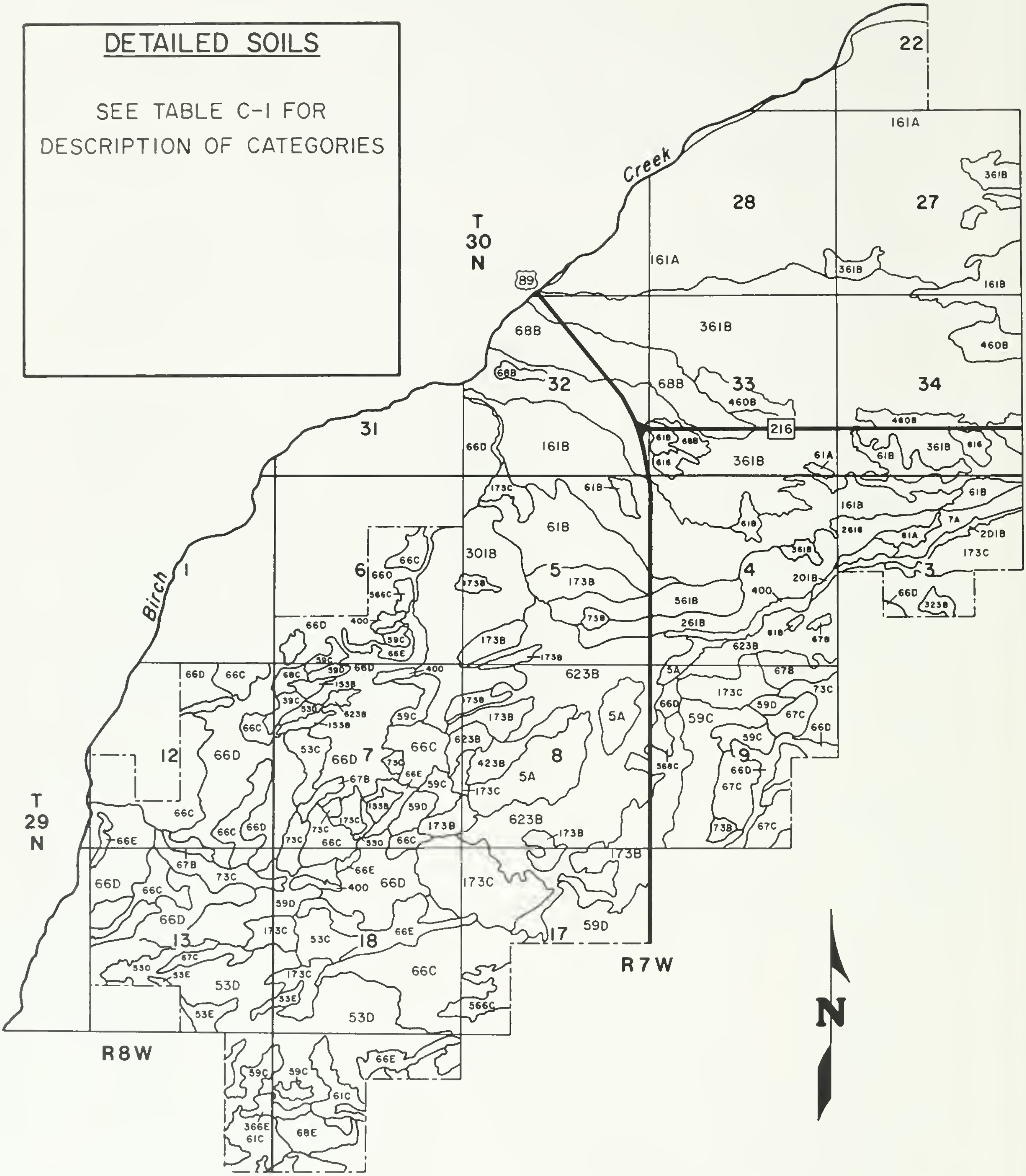

TABLE C-1.

LEGEND FOR DETAILED SOILS MAP

Mapping Unit	Description	Land Class*
5A	Havre loam, 0 to 2 percent slopes	6
7A	Lohmiller silty clay loam, 0 to 2 percent slopes	1
53C	Bainville loam, 4 to 8 percent slopes	6
53D	Bainville loam, 8 to 15 percent slopes	6
53E	Bainville loam, 15+ percent slopes	6
59C	Chama loam, 4 to 8 percent slopes	3
59D	Chama loam, 8 to 15 percent slopes	3
61A	Doughty loam, 0 to 2 percent slopes	2
61B	Doughty loam, 2 to 4 percent slopes	2
66C	Midway silty clay loam, 4 to 8 percent slopes	6
66D	Midway silty clay loam, 8 to 15 percent slopes	6
66E	Midway silty clay loam, 15+ percent slopes	6
67B	Morton loam, 2 to 4 percent slopes	3
67C	Morton loam, 4 to 8 percent slopes	6
68B	Nihill gravelly loam, 2 to 4 percent slopes	3
73B	Regent clay loam, 2 to 4 percent slopes	6
73C	Regent clay loam, 4 to 8 percent slopes	6
153B	Bainville-Rockland complex, 2 to 4 percent slopes	6
153E	Bainville-Rockland complex, 15+ percent slopes	6
161A	Doughty gravelly loam, 0 to 2 percent slopes	2
161B	Doughty gravelly loam, 2 to 4 percent slopes	2
173B	Kobar clay loam, deep, 1 to 4 percent slopes	3
173C	Kobar clay loam, deep, 4 to 8 percent slopes	3
201B	Alluvial land, poorly drained, 0 to 4 percent slopes	6
261A	Doughty loam and gravelly loam, wet, 0 to 2 percent slopes	6
261B	Doughty loam and gravelly loam, wet, 2 to 4 percent slopes	6
301B	Alluvial land poorly drained, saline, 0 to 4 percent slopes	6
323B	Laurel-Midway complex, 0 to 4 percent slopes	6
361B	Doughty-Nihill complex, 2 to 4 percent slopes	3
366E	Midway-Rockland complex, 15+ percent slopes	6
400	Seeped footslopes, swales and drainageways	6
423B	Laurel silty clay loam and clay loam, wet, 0 to 4 percent slopes	6
460B	Cheyenne-Beaverton loam and gravelly loams, 2 to 4 percent slopes	3
561B	Doughty loam, water table	6
566C	Midway-Pierre-Bone complex, 4 to 8 percent slopes	6
623B	Laurel-Midway complex, 0 to 4 percent slopes	6

*Land classes 1, 2, and 3 are irrigable land; land class 6 is nonirrigable.

TABLE C-2

LAND CLASSIFICATION OF PROPOSED FIELDS
(Acres)

		Irrigable Land				Nonirrigable Land			Total Proposed for Irrigation
		Class							
	Section	1	2	3	Total	Wet Soils	Other Class 6	Total Class 6	
Field A	12	0	0	0	0	0	122	122	122
Field B	12	0	0	0	0	0	82	82	82
	13	0	0	4	4	0	129	129	133
Total		0	0	4	4	0	211	211	215
Field C	13	0	0	33	33	0	67	67	100
	18	0	0	6	6	0	31	31	37
Total		0	0	39	39	0	98	98	137
Field D	13	0	0	0	0	0	14	14	14
	24	0	0	0	0	0	13	13	13
	18	0	0	0	0	0	16	16	16
	19	0	0	5	5	0	16	16	21
Total		0	0	5	5	0	59	59	64
Field E	19	0	0	24	24	0	9	9	33
Field F	17	0	0	21	21	0	105	105	126
	18	0	0	4	4	0	40	40	44
	19	0	0	0	0	0	20	20	20
	20	0	0	0	0	0	6	6	6
Total		0	0	25	25	0	171	171	196
Field G	8	0	0	13	13	0	34	34	47
	17	0	0	126	126	0	51	51	177
Total		0	0	139	139	0	85	85	224
Field H	7	0	0	54	54	0	31	31	85
	8	0	0	17	17	0	51	51	68
	17	0	0	25	25	0	22	22	47
	18	0	0	31	31	0	13	13	44
Total		0	0	127	127	0	117	117	244
Field I	7	0	0	0	0	0	85	85	85
Field J	7	0	0	0	0	0	34	34	34
Field K	9	0	0	133	133	0	142	142	275
	16	0	0	0	0	0	13	13	13
Total		0	0	133	133	0	155	155	288
Field L	4	0	0	18	18	167	60	227	245
	9	0	0	59	59	0	31	31	90
Total		0	0	77	77	167	91	258	335
Field M	9	0	0	0	0	0	38	38	38
Field N	3	0	0	58	58	0	17	17	75
Field O	5	0	0	55	55	62	108	170	225
	8	0	0	0	0	0	14	14	14
Total		0	0	55	55	62	122	184	239
Field P	5	0	0	0	0	0	27	27	27
	6	0	0	0	0	16	0	16	16
	7	0	0	3	3	25	10	35	38
	8	0	0	43	43	64	37	101	144
Total		0	0	46	46	105	74	179	225
Field Q	5	0	0	8	8	97	0	97	105
	6	0	0	0	0	78	20	98	98
Total		0	0	8	8	175	20	195	203
Field R	8	0	0	6	6	0	232	232	238
Field S	3	38	0	4	42	2	0	2	44
Field T	4	2	0	0	2	25	33	58	60
	9	7	0	5	12	0	33	33	45
Total		9	0	5	14	25	66	91	105
Field U	3	0	8	0	8	37	14	51	59
GRAND TOTAL		47	8	755	810	573	1,820	2,393	3,203

Note: This is a preliminary assessment only. Use of a more detailed land classification and of the final irrigation layout would change these acreages.

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MONTANA
DEPARTMENT OF NATURAL RESOURCES
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